Eur J Vasc Endovasc Surg **16**, 543–545 (1998)

Correspondence

Ruptured Aortic Aneurysms

Sir,

I read with interest the retrospective study of van Dongen *et al.*[1] and agree that it is important to study the factors associated with mortality following surgery for ruptured abdominal aortic aneurysm (RAAA). The use of multiple logistic regression is a valid test to predict an outcome variable from the value of other binary variables.[2] However, the use of relative risk as a quantitative assessment of mortality risk (Tables 4 and 6) is flawed, as this is not a prospective study. Odds ratio is the preferred calculation for a retrospective study because of the way subjects are sampled.[3] If odds ratio is interpreted as a relative risk it will always overstate any effect size. This will be particularly exaggerated when the initial risk is high, as is the case for mortality following RAAA (overall hospital mortality in this study = 25%).[4]

E. P. L. Turton
Leeds, U.K.

References

1 Von Dongen HPA, Leusink JA, Moll FL, Brons FM, de Boer A Ruptured abdominal aortic aneurysm factors influencing post-operative mortality and long-term survival *Eur J Vasc Endovasc Surg* 1988, **15**. 62–66
2 Altman DG Relation between several variables In· *Practical Statistics for Medical Research* London Chapman and Hall, 1991, 336–360.
3 Altman DG Comparing groups – categorical data In *Practical Statistics for Medical Research.* London: Chapman and Hall, 1991, 266–270
4 Davies HT, Crombie IK, Tavakoli M When can odds ratios mislead? *BMJ* 1998, **316**· 989–992

Authors' reply

We appreciate the reaction of Turton to our article. The main question is whether it is acceptable to use relative risks as shown in Tables 4 and 6 in our retrospective study on risk factors for mortality in patients with ruptured abdominal aortic aneurysm. We think the answer is yes for the following reasons. Firstly, the relative risks as presented in Table 6 are based on Cox regression analysis which is the appropriate way to analyse a follow-up study irrespective of whether it is prospective or retrospective. Secondly, for the relative risks as presented in Table 4 we used logistic regression which, in principle, estimates odds ratios. Turton states correctly that the use of odds ratios overestimates the relative risk in case of a high frequency of the outcome as recently reviewed by Davies *et al.*[1] Davies *et al.* demonstrated that odds ratios always overestimate relative risk but only when the risk in one of the comparison groups is higher than 20% will the use of an odds ratio lead to dramatic overestimations of relative risk. However, in our analysis for Table 4 the frequency of early mortality was 26 out of 309 patients (8.4%) and not the 25% hospital mortality as stated by Turton. Therefore, the odds ratios we estimated and which were presented as relative risks in Table 4 are, in our opinion, acceptable presentations of the association between risk factors and mortality.

A. de Boer, H. P. A. van Dongen, J. A. Leusink and F. L. Moll
Utrecht, The Netherlands.

Reference

1 Davies HTO, Crombie IK, Tavakoli M When can odds ratios mislead? *BMJ* 1998; **316** 898–991

Cognitive Testing

Sir,

We were interested to read the review of cognitive testing in patients undergiong carotid endarterectomy by Mr Irvine and colleages.[1] This paper is highly critical of the methodology employed by many previous studies. Some of these criticisms regarding the

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